Public Buildings Enhanced Energy Efficiency Program

SCREENING RESULTS FOR MINNESOTA STATE COMMUNITY AND TECHNICAL COLLEGE MOORHEAD

Date: 6/14/2010

1.0 Screening Summary

Table A: Site Summary

Facility Name	M State Moorhead
Location	1900 28TH Ave S, Moorhead, MN 56560
Facility Manager	Robin Mattson
Number of Buildings	12
Interior Square Footage	190,328
PBEEEP Provider	Center for Energy and Environment (Angela Vreeland)
Date Visited	May 5, 2010
State Project Manager	Matt Sheppard
Annual Energy Cost	$207,988 (2009)
Annual Energy Usage	1,653,480 kWh (electric) 110,502 Therms (natural gas)
Utility Company	Moorhead Public Service (electricity), Xcel Energy (natural gas)
Site Energy Use Index (EUI)	91.8 kBtu/sq. ft.
Benchmark EUI (from B3)	123.4 kBtu/sq. ft.

Table B: Building Summary

Building Name	State ID	Area (Square Feet)
Main Building	E26266T0166	38,723
Science and Trades- 06/07 Add	E26266T1206	21,917
Facilities Building	E26266T0268	2,900
Refrigeration & Air Conditioning	E26266T0371	6,000
Carpentry Metal	E26266T0471	6,102
Library	E26266T0572	30,492
Aud/General Ed/Auto	E26266T0677	51,065
East Student Commons	E26266T0784	10,340
Graphic Design Tech	E26266T0889	6,814
Auto/Diesel Storage	E26266T0990	3,200
Admin/Student Services	E26266T1092	5,665
Health Science Addition	E26266T1102	7,110

1.1 Recommendations:

A detailed investigation of the energy usage and energy savings opportunities of the twelve buildings at Minnesota Community and Technical College (M State) Moorhead is not recommended at this time because of an existing Guaranteed Energy Savings Contract (GESC).

The GESC at M State Moorhead covers lighting and Variable Frequency Drives (VFDs) on the mechanical equipment in the facility. Since the contract does not cover all mechanical equipment and the EUI of the building is moderately high, the facility should be re-visited and screened once the GESC expires to determine the potential for energy savings opportunities.

2.0 Minnesota State Community and Technical College Moorhead Screening Overview

M State Moorhead is made up of ten attached buildings and two detached buildings ranging in size from 2,900 to 51,065 interior square feet. The two detached buildings are storage buildings that are neither heated nor cooled. The table below lists the known equipment on the campus; it is incomplete because a full screening was not conducted. Based on reported information from the application, there is a combination of pneumatic and DDC actuation and control in the building. According to the building staff, 85% of the air handlers are being replaced during the summer of 2010. It is unknown if that work is being commissioned.

Table C: Mechanical Equipment Summary

Quantity	Equipment
1	Johnson Controls Metasys 4.0 Building Automation System (controls 10 buildings)
19	Air Handlers
10	Rooftop Units
1	Make-up Air Units
Unknown	VAV Boxes
1	Chiller- electric
Unknown	Hot Water Boiler(s)- natural gas
Unknown	Steam Boiler(s)- natural gas

The screening process is designed to determine the likelihood that an energy investigation will lead to a cost-effective project that produces energy savings. A full screening of the buildings at this facility was not conducted because it was discovered that the facility is currently under a Guaranteed Energy Savings Contract (GESC) with Energy Services Group.

At this time, PBEEEP is unable to conduct a project at sites under a GESC for the following reasons:

A. Contract obligations of the Agency:
    i. A GESC may contractually bind activities affecting certain functions, attributes, or conditions of equipment and systems covered by the GESC.
B. Energy savings claims ownership:
    i. Savings generated from the PBEEEP project are supposed to service the lease purchase financing agreement and once those obligations are complete, go directly to the Agency. If a GESC agreement exists the full savings generated through PBEEEP may be affected and may not be available for servicing the lease purchase loan or to go directly to the Agency after the loan term is completed.
C. Cost effectiveness for the Agency:
    i. PBEEEP is structured on the ability to couple longer payback items with shorter payback items. In the case of a GESC, the major energy saving opportunities or low cost/no cost opportunities most likely have been identified and implemented

which leaves no opportunity to fund longer payback measures. In this case, the PBEEEP project may not be cost effective as a supplement to an existing GESC. Therefore the costs to conduct the project as compared to the savings opportunities identified may not be cost effective for the Agency.

Since the GESC at M State Moorhead covers lighting and VFDs, it is likely that there will be savings potential after the contract expires. At the end of the contract, PBEEEP would recommend re-screening the facility in greater detail at that time to determine whether any of the buildings would be recommended for investigation. Based on the equipment at M State Moorhead, the following opportunities may apply and typically lead to a short payback:

- Adjustment to air handler and exhaust fan operation schedules to match occupancy and reduce run-time
- Optimization of air handler economizer control to prevent excessive outside air intake and ensure adequate ventilation
- Implement discharge air temperature reset control of air handlers to reduce heating and cooling loads
- Implement hot water reset control for hot water boilers to reduce natural gas use
- Implement cut-off controls for steam boiler to eliminate unnecessary boiler operation.

Future study of M State Moorhead is recommended for a number of reasons:

- Much of the equipment is controlled by the building automation system, which provides advantageous analysis capabilities and allows for greater control and tracking at individual equipment levels up to system-wide operational levels.
- There is a significant amount of energy consuming equipment at the campus, providing more opportunities for energy reduction
- The EUI for the campus is moderately high which indicates there is potential for energy savings
- The building staff that CEE met (Robin Mattson and Scott Lein) were eager to be involved in PBEEEP and showed a clear interest in reducing energy use.